ABSTRACT

Objective: To report our experience using a broad spectrum antimicrobial, povidone-iodine, as a novel at-home prescription treatment for molluscum contagiosum.
Design/Setting: A systematic review of cases presenting to one of the author's private dermatology clinics from January to July of 2015 identified 12 patients with molluscum contagiosum seeking treatment.
Participants: The population was pediatric, with six males and six female patients included (age range 2–17 years, mean age 6 years). **Measurements:** Patients were evaluated at baseline and returned to the office for evaluation at four-week intervals until resolution or failure to show for appointments, with number and location of lesions being recorded at each visit. Adverse effects were evaluated at each visit. **Results:** All 12/12 (100%) patients demonstrated complete or partial resolution. There were a total of 115 lesions treated in the case series, and 103/115 (90%) resolved. Complete resolution occurred in 8/12 (67%) patients. Of the 8/12 with complete resolution, 4/8 (50%) patients showed complete resolution at the four-week follow-up visit and 4/8 (50%) showed complete resolution at the eight-week follow-up. Of the 4/12 (33%) patients who failed to demonstrate complete resolution, 4/4 (100%) showed partial resolution.

[Abstract continued on next page]

BRIEF REPORT

Molluscum Contagiosum Treated with Dilute Povidone-Iodine: A Series of Cases

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MOLLUSCUM CONTAGIOSUM (MC) is a common viral skin condition, caused by a member of the DNA poxvirus family.[1] MC is spread from direct contact, either via person-to-person contact with lesions or innocuously via fomites. The skin infection is most common in children and sexually active adults. MC can affect any area of the skin and remains infectious until the lesions have resolved. Most lesions will resolve without treatment, with the average length of infection lasting between 6 and 18 months.[2] It is common in children and generally presents with numerous asymptomatic lesions; however, it can present with pruritus, erythema, and, on some occasions, bacterial superinfections with inflammation and pain.[3,4] Patients frequently seek treatment to reduce social stigma and prevent transmission among siblings. Current treatment approaches include physical destruction, chemical destruction, and use of immunomodulatory medicines in the physician's or health care practitioner's office.[5,6] Although there are many anecdotal remedies, none have been shown to be universally effective as a take-home prescription agent in controlled clinical trials. In this case series, the authors report their experience using a broad-spectrum, antimicrobial, povidone-iodine (PVP-I) as a novel, at-home prescription treatment for MC.

METHODS

A systematic retrospective review of all cases presenting to one of the author's (KC) private dermatology clinics from January to July of 2015 identified 12 patients with MC seeking treatment. There were six male and six female patients included (age range 2–17 years, mean age 6 years). The lesions varied in location, including face, trunk, arms, and legs, and each patient had multiple lesions (ranging from 2–23). Each patient was prescribed a topical gel comprised of 2% PVP-I in a dimethyl sulfoxide (DMSO) vehicle that was prepared via a licensed compounding pharmacy. The gel was applied twice daily without interruption between visits. Patients returned to the office for evaluation at four-week intervals

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Conclusion: This case series demonstrates considerable success for treatment of molluscum contagiosum with a dilute povidone-iodine preparation. The treatment was well-tolerated, with minimal side effects.

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until resolution or failure to show for appointments, with number and location of lesions being recorded at each visit. If patients failed to show for appointments, efforts were made to contact the patient via telephone. Adverse effects were evaluated at each visit.

RESULTS

All 12/12 (100%) patients demonstrated complete or partial resolution. There were a total of 115 lesions treated in the case series and 103/115 (90%) resolved. Complete resolution occurred in 8/12 (67%) patients. Of the 8/12 with complete resolution, 4/8 (50%) patients showed complete resolution at the four-week follow-up visit and 4/8 (50%) showed complete resolution at the eight-week follow-up (Figures 1–3). Of the 4/12 (33%) patients who failed to demonstrate complete resolution, 4/4 (100%) showed partial resolution (66%, 75%, 80%, 60%); however, 3/4 (75%) patients in this subset failed to show for scheduled visits. Of the patients who failed to show for scheduled visits, 2/4 patients were able to be reached via telephone, subsequently confirming resolution of remaining lesions. Mild irritation was documented in 2/12 (14%) patients on skin surrounding the lesions. Individually inflamed lesions were not counted as adverse reactions as this is part of the clearance process in many MC lesions. The mean lesion number was 10 per patient (Table 1). None of the patients reported any stinging or burning upon application of the gel.

DISCUSSION

MC, although medically benign, is a rapidly transmissible viral infection that can be cosmetically disfiguring, painful, socially stigmatizing, and secondarily infected. The most commonly utilized treatment is the in-office application of cantharidin, causing selective intraepidermal acantholysis, inducing a blister at the involved skin site.[7,8] Local destruction can also be achieved via curettage, laser, cryotherapy, or needle extraction, but these are painful and not tolerated well by children. Lesion eradication may also be chemical (trichloroacetic acid, tretinoin), or immunologic (imiquimod), inciting an inflammatory response which upregulates the immune system to clear the infection.[9] Topical cidofovir has been used in the immunosuppressed population, but has not been systemically studied in the general population.[10,11] Currently, there are no United States Food and Drug Administration (FDA)-approved prescription drugs for MC. This case series describes the authors' experience with a potentially new therapeutic option.

PVP-I is used primarily in dermatology as a surgical preparation, as it has been recognized as a broad-spectrum, resistance-free biocidal agent for many years. PVP-I also has a long track record of safety and tolerability given its extensive

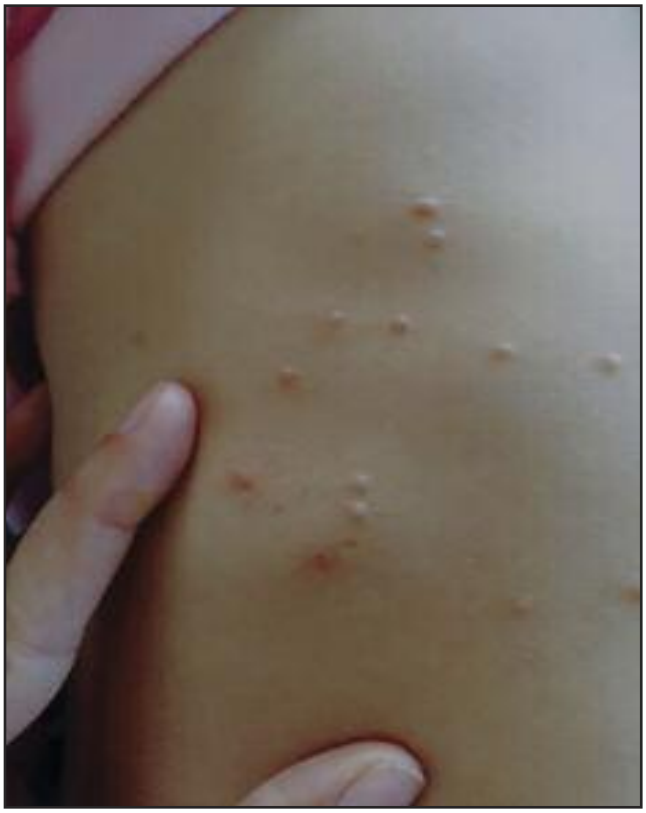

Figure 1. Patient at baseline.

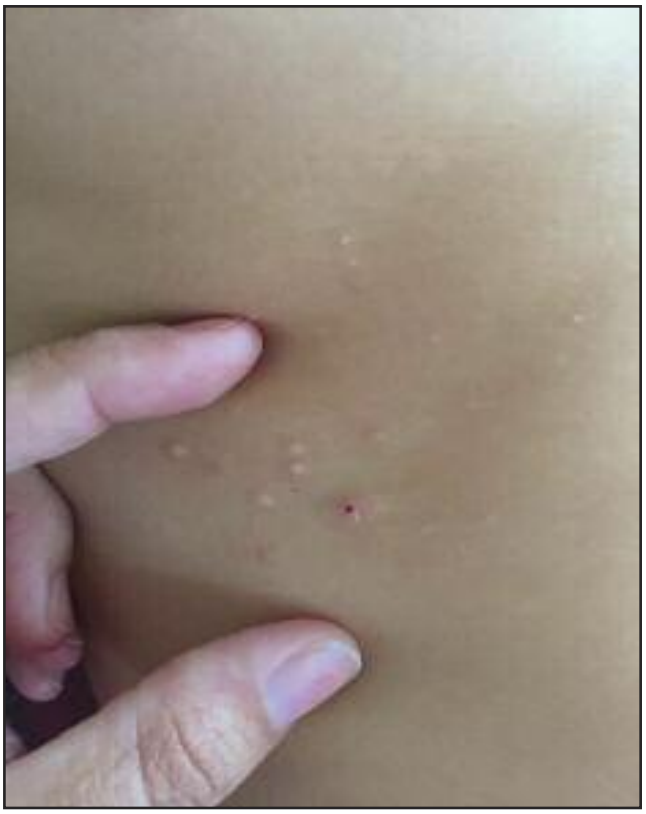

Figure 2. Patient at follow-up after 4 weeks of treatment.

history of use in the operating room. Although incompletely understood, it is likely that free iodine poisons electron transport, inhibits cellular respiration, destabilizes membranes, inhibits protein synthesis, and denatures nucleic acids. Although PVP-I kills micro-organisms including bacteria, viruses, yeasts, molds, fungi, and protozoa, it has scarcely been used for purposes outside of skin asepsis in dermatology.[12]

DMSO is currently FDA approved for the treatment of interstitial cystitis.[13] DMSO is also a very effective pharmaceutical vehicle, greatly enhancing percutaneous penetration when used in combination with other substances.[14] It is a polar, aprotic solvent that has the ability to carry an enormous

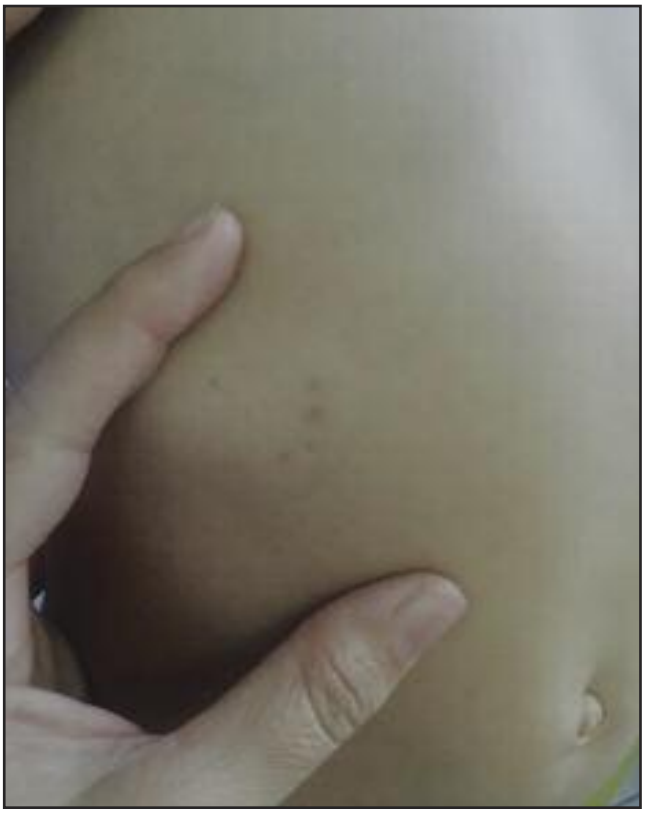

Figure 3. Patient at follow-up after 8 weeks of treatment.

Table 1. Summary of patient data

SUBJECT	AGE/GENDER	BASELINE NUMBER OF LESIONS	WEEK 4 NUMBER OF LESIONS	WEEK 8 NUMBER OF LESIONS	WEEK 12 NUMBER OF LESIONS	% RESOLVED	LOCATION	ADVERSE EVENTS
1	6/F	3	0	Cleared	Cleared	100	Ante-cubital fossa	None
2	6/F	12	8	3	0	100	Bilateral knees	Mild Irritation
3	2/F	6	2	2*	No Show	66	Right elbow	None
4	10/M	23	12	4	3	75	Left axilla/shoulder	None
5**	5/F	15	7	0	Cleared	100	Abdomen	None
6	3/M	6	4	0	Cleared	100	Left forearm	None
7	5/M	8	2	0	Cleared	100	Perioral	None
8	17/F	15	10	3*	No Show	80	Inner thighs	None
9	3/F	10	0	Cleared	Cleared	100	Elbows	None
10	10/M	10	4	4*	No Show	60	Left neck	Mild Irritation
11	7/M	2	0	Cleared	Cleared	100	Right axilla	None
12	5/M	5	0	Cleared	Cleared	100	Left cheek	None

*Denotes number of lesions counted as not resolved in Results section in patients that failed to show for scheduled appointments.
**Denotes patient in Figures 1–3

library of chemical entities through the stratum corneum, ultimately into the dermis. DMSO serves as an exemplary delivery system for the PVP-I to reach the nidus of infection in MC, the Henderson-Patterson bodies.

This encouraging novel combination demonstrated an overall 90-percent clearance rate of lesions seen during in-office visits. The actual number of lesions resolved may in fact be higher as documentation of clearance via telephone calls for patients failing to show in the clinic was not included in the dataset. A controlled clinical trial with longer endpoints may demonstrate higher clearance. Overall tolerability was excellent, with only two patients demonstrating mild irritation in the form of dryness of the surrounding skin at application site.

This case review demonstrates considerable success with this novel, dilute PVP-I/DMSO treatment. Further prospective, placebo-controlled, double-blinded, clinical trials are warranted to further evaluate this promising new therapy.

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